Net-Centric Information Environment

Operational Capabilities and Challenges

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Dr Gary L. Salisbury
Vice President
Business Development

Mission Systems Sector
Northrop Grumman Corporation

Agenda

- **The Environment**

- **What has Changed?**

- **Net-Centric Challenges – How they can be Met**

- **Summary**

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The Environment

"We are in an era characterized by uncertainty and surprise. Our adversaries will continue to focus on the use of asymmetric capabilities that avoid US strengths and exploit potential vulnerabilities. Current and future adversaries will adapt as our capabilities evolve. The world, including our adversaries, is empowered through interconnected networks and technology supplied by the global industrial base.

… We are fighting a war in the information domain and the enemy is out maneuvering us."

*Joint Net-Centric Operations
Campaign Plan, Joint Staff J6
Oct 2006*

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What Has Changed in the Environment

- **Speed of Decision (days – hours – minutes)**
- **Operational Diversity**

"… in one moment in time, our service members will be feeding and clothing displaced refugees – providing humanitarian assistance. In the next moment, they will be holding two warring tribes apart – providing peacekeeping operations. Finally, they will be fighting a highly lethal mid-intensity battle. All on the same day, all within three city blocks." (Gen Krulak, USMC, (Ret))

- **Increasing Network Dependencies**
- **Increased Interdependence**
  - Shared Awareness and Self Synchronizing

… all driven by evolving threats, capabilities of the military, and technology

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What do these Changes mean?

- **Cultural**
  - Rapidly Adapt to Changes
- **Acquisition**
  - Develop Spirally
  - Field Rapidly
  - Leverage Investments
- **Technologies**
  - Adopt SOAs
  - Mandate Globally Discoverable, Secure Data

… Network Centric Operations in the Information Age

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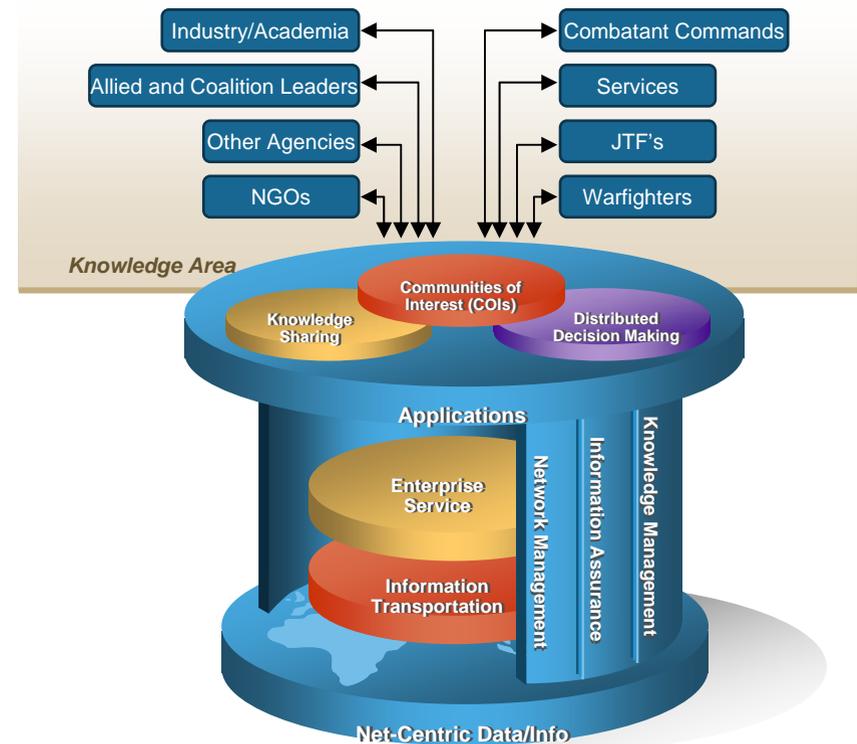
Net-Centric Transformation – the Journey

Present
2003 - 2007

Future
2008 & Beyond

Enterprise
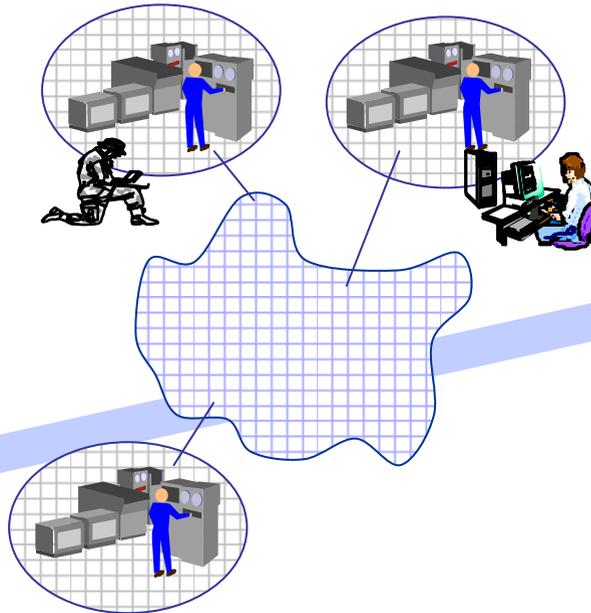
NETWORK CONNECTED
- Platform and organization centric
- Local Client-Server services
- Non-standard data representations

NETWORK CENTRIC
- Different directories, security, access processes
- Governance responsibilities established
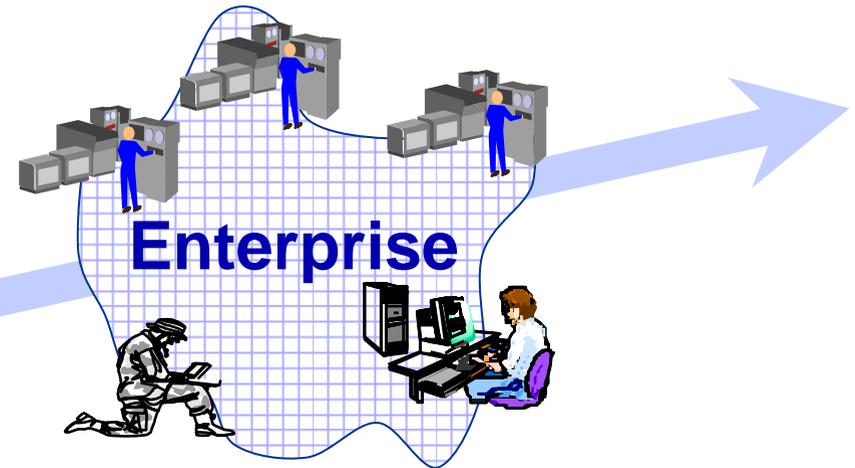
ENTERPRISE CENTRIC
- Common Enterprise Services
- Operationally available and secure data/information
- Mission-based information sharing

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Changes = Challenges

- **Cultural**
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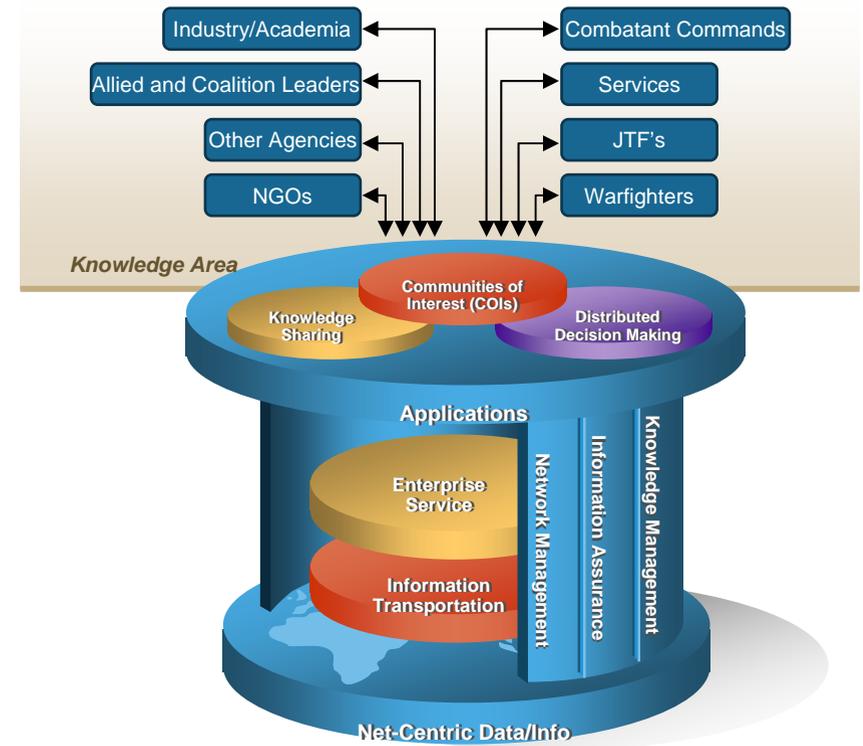
Spiral Development is the Imperative

"Advanced technology shall be integrated into producible systems and deployed in the shortest time practicable. Approved, time-phased capability needs matched with available technology and resources enable evolutionary acquisition strategies. Evolutionary acquisition strategies are the preferred approach to satisfying operational needs. Spiral development is the preferred process for executing such strategies." (DoD 5000.1)
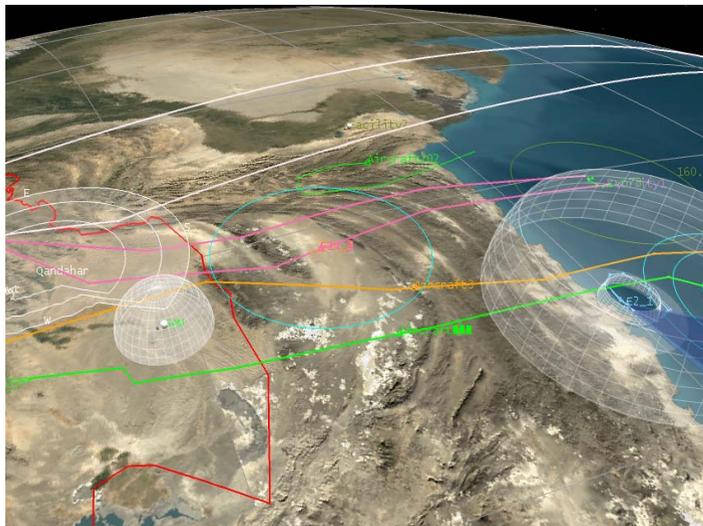
Rapid Delivery of an Additive $n\%$ Provides <u>Responsiveness</u> to Changes in Requirements and Technologies on an <u>Affordable</u> Basis

Adding $n\%$ capability to a DoD Systems of Record = current capability + $n\%$

Service Oriented Architectures

- **Easily enables Enterprise-Centric Interfaces**
- **Provides Rapid, Affordable Addition of Capabilities**
  - GCCS-M to AIS Interface Delivered in 30 Days
  - GCCS-M to AIS Interface Cost Less Than $100K
- **Data Access/Sharing Significantly Enabled**
  - Orchestration, Mediation, Publish & Subscribe Services
- **Leverages Investments in Current C2 Systems**
  - Provides Warfighters a Higher Level of Interoperability and Capability via Fielded Systems

Allows Rapid, Affordable Addition of Capability for Fielded Systems

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Integration at the Next Higher Level

Dynamic Re-Planning

New Target

Modified Mission Plan

Engage

JMPS

GCCS

FBCB2
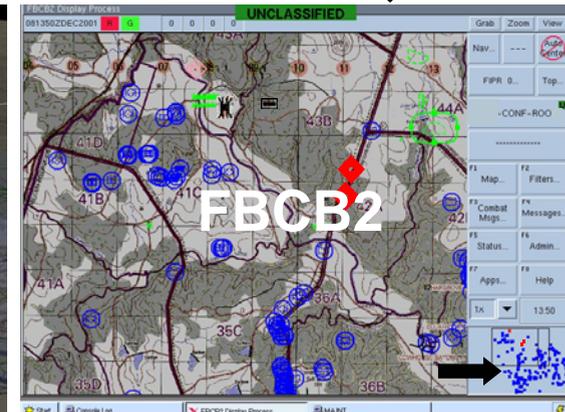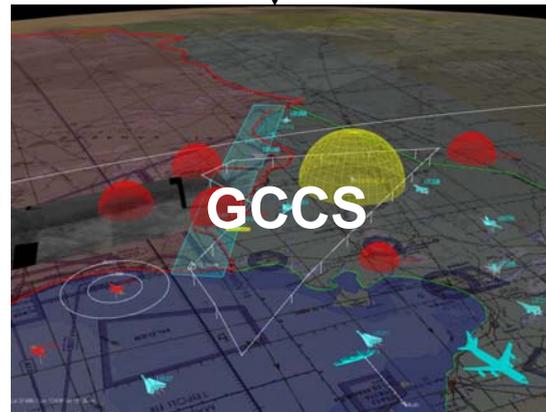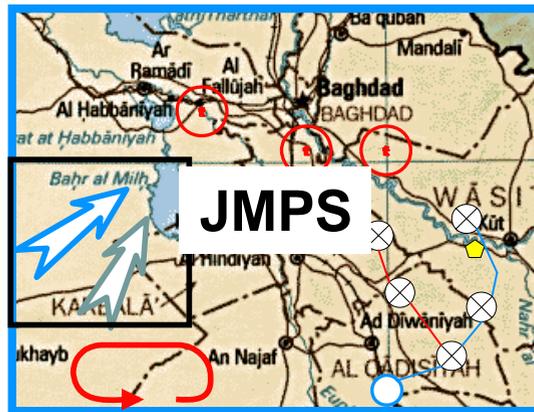
Enemy Spot Report

New Capability That Individual Systems do not Have

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The Biggest Challenge – Data

- **Strategic, Operational, Tactical Decision Makers faced with:**
  - Decision Cycle Time approaching zero
  - Rapidly changing, complex C2 environment
- **Data must:**
  - Support Centralized Planning
  - Support Decentralized Execution
  - Be Survivable, Redundant and Protected
  - Be Accessible Globally
- **Adherence to Standards is Key**
  - Key Interface Profile (KIP) Transport Family
  - Net-Centric Implementation Directive (NCID) – Sys Engineering
  - Net-Centric Data Strategy (NCDS)

Best Source of Data? DoD's Systems of Record

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Summary

- **The Information Environment has Changed … but Movement is in the Right Direction**

    - Spiral Development is the Correct Path

    - Data definition/enforcement of Standards is Key

    - Leverage Existing Systems of Record – Proven, Low-Risk, Data-Rich

- **Technology is Ready**

    - SOAs can Leverage Current Investments

    - Enterprise-Centric Interfaces can Rapidly Add Capabilities to existing Systems of Record

    - Data Services (Orchestration, Mediation, Publish & Subscribe) across the Enterprise are key

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THE RESULTS

The Warfighters have immediate access to the information they need in the dynamic environment of the 21st Century